

Remarks

Reconsideration of this application is requested. Claims 1 and 39 have been amended. Accordingly, claims 1, 5, 6, and 30-42 remain in the Application.

Drawings

The Examiner's permission is requested to enter the enclosed formal drawings.

The drawings as originally filed were objected to by the Examiner. Applicants' believe that the enclosed formal drawings should address the Examiner's objections.

Response to Rejection of claim 39 under 35 U.S.C. §112

Although it is believed that the phrase "tungsten via" meets the requirements of 35 U.S.C 112, second paragraph, claim 39 has been amended as suggested by the Examiner to further prosecution of the application. It should be noted that the amendment to claim 39 did not narrow the scope of claim 39.

Response to Rejection of claims 1, 5 and 6 under 35 U.S.C. §103

The Office action rejects claims 1, 5 and 6 under 35 U.S.C. §103(a) as being unpatentable over Evans et al. (U.S. Patent No. 5,864,932) and Yoshimori et al. (U.S. Patent No. 5,468,684). Applicant respectfully traverses this rejection in view of the amendments above and the remarks that follow.

It is well established that in order to establish a prima facie case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Applicants' submit that neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a first filled via between the first metal layer and the second metal layer as recited in Applicants' claim 1.

On pages 4 and 5 of the Office action, it appears that Office action reads element 84 of Yoshimori (FIG. 1 #44, FIG. 5, FIG. 14, column 10, lines 62-64 of Yoshimori et al.) as a "second metal layer", and element 18 of Evans et al. (FIG. 52 # 18 of Evans et al.) as a "first metal layer." Further, it appears that the Office action reads the photomask and etch steps to pattern layer 82 (FIG. 1 #49, 50, FIG. 9 and 10, col. 11, lines 5-10) as "forming a first filled via between the first metal layer and the second metal layer." Applicants' respectfully submit that this reading of Yoshimori et al and Evans et al. misrepresents the teachings of Yoshimori et al. As discussed in column 11, lines 5-10, steps # 49 and 50 refer to the photomask and etch steps to pattern layer 82, and not to forming a filled via between the first metal layer and the second metal layer.

Accordingly, neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a first filled via between the first metal layer and the second metal layer as recited in Applicants' claim 1. Since the cited documents do not teach or suggest all the limitations of Applicants' claims 1, it is believed that the rejection of this claim should be withdrawn and that claim 1 is in condition for allowance.

Claims 5 and 6 depend from claim 1 and are believed to be allowable for the same reasons as claim 1.

Response to Rejection of claims 30-34 under 35 U.S.C. §103

The Office action rejects claims 30-34 under 35 U.S.C. §103(a) as being unpatentable over Evans et al. (U.S. Patent No. 5,864,932) and Yoshimori et al. (U.S. Patent No. 5,468,684). Applicant respectfully traverses this rejection in view of remarks that follow.

Applicants' submit that neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a second ferroelectric oxide memory layer over the first ferroelectric oxide memory layer, wherein the second ferroelectric oxide memory layer is larger than the first ferroelectric oxide memory layer as recited in Applicants' claim 30.

On page 6 of the Office action, it appears that the Office action implies that FIGS. 1 and 15 of Yoshimori et al. teach forming a second ferroelectric oxide memory layer over the first ferroelectric oxide memory layer. The Office action appears to refer to element 82 (FIG. 1 #42 of Yoshimori et al.) as a "first ferroelectric oxide memory layer," however, applicants' find no teaching of a second ferroelectric oxide memory layer in Yoshimori et al.

Accordingly, neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a second ferroelectric oxide memory layer over the first ferroelectric oxide memory layer, wherein the second ferroelectric oxide memory layer is larger than the first ferroelectric oxide memory

layer as recited in Applicants' claim 30. Since the cited documents do not teach or suggest all the limitations of Applicants' claims 30, it is believed that the rejection of this claim should be withdrawn and that claim 30 is in condition for allowance.

Claims 31-34 depend from claim 30 and are believed to be allowable for the same reasons as claim 30.

Response to Rejection of claims 35-41 under 35 U.S.C. §103

The Office action rejects claims 35-41 under 35 U.S.C. §103(a) as being unpatentable over Evans et al. (U.S. Patent No. 5,864,932) and Yoshimori et al. (U.S. Patent No. 5,468,684). Applicant respectfully traverses this rejection in view of remarks that follow.

Applicants' submit that neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a first dielectric layer over the substrate and adjacent the first electrode material, wherein portions of the first electrode material and the first dielectric material define the cavity; and forming a first ferroelectric memory layer in the cavity over the first electrode material as recited in Applicants' claim 35.

On page 7 of the Office action, the Office action refers to Evans et al. generally and FIGS. 16C to 18 of Yoshimori et al., and does not specifically show how the elements of claim 35 are taught or suggested by Evans et al. or Yoshimori et al. Applicants' submit that neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming a first ferroelectric

memory layer in a cavity defined by portions of a first electrode material and a first dielectric material.

Since the cited documents do not teach or suggest all the limitations of Applicants' claims 35, it is believed that the rejection of this claim should be withdrawn and that claim 35 is in condition for allowance.

Claims 36-41 depend either directly or indirectly from claim 35 and are believed to be allowable for the same reasons as claim 35.

Response to Rejection of claims 35-41 under 35 U.S.C. §103

The Office action rejects claims 35-41 under 35 U.S.C. §103(a) as being unpatentable over Evans et al. (U.S. Patent No. 5,864,932) and Yoshimori et al. (U.S. Patent No. 5,468,684). Applicant respectfully traverses this rejection in view of remarks that follow.

On page 8 of the Office action, the Office action refers to Evans et al. generally and FIGS. 16C to 18 of Yoshimori et al., and does not specifically show how the elements of claim 42 are taught or suggested, either alone or in combination, by Evans et al. or Yoshimori et al. Applicants submit that neither Evans et al. nor Yoshimori et al. either individually or in combination teach or suggest forming at least one ferroelectric layer in the cavity as recited in Applicants' claim 42.

Since the cited documents do not teach or suggest all the limitations of Applicants' claims 42, it is believed that the rejection of this claim should be withdrawn and that claim 42 is in condition for allowance.

Conclusion

In view of all of the above, it is believed that Applicants' claims are allowable, and the case is in condition for allowance, which action is earnestly solicited. Reconsideration of the objections is respectfully requested.

Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner believes that there are any informalities that can be corrected by an Examiner's amendment, a telephone call to the undersigned at (480) 552-0624 is respectfully solicited.

Respectfully submitted,
Jian Li et al.

A handwritten signature in black ink, appearing to read 'G. Caldwell', is written over the printed name of Gregory D. Caldwell.

Gregory D. Caldwell
Patent Attorney
Reg. No. 39,926

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c/o Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Blvd., Seventh Floor
Los Angeles, CA 90025-1026
(503) 264-0967